

Minutes of the Eastham Water Management Committee Meeting of January 3, 2018

Chair Adele Blong called the meeting to order at 2:33 pm in the Earle Mountain Room of Town Hall. Present also were members Harris, Lewis, Roberts, Bumby and Bryan.

Any documents distributed prior to or during this meeting are listed at the end of these minutes.

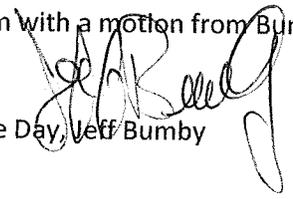
This meeting is a joint meeting of the Eastham Board of Selectmen, Eastham Water Management Committee and the Eastham Board of Health. The meeting was chaired by Selectman Chair O'Shea who stated that the purpose of the meeting was to receive and discuss the report of GHD consultants on water quality as it relates to Salt Pond.

Minutes of the discussion of this joint meeting were provided by the Board of Selectmen Clerk.

Documents distributed prior to or during this meeting:

Town of Eastham, MA Wastewater Management Planning and Salt Pond Groundwater Analysis and Permeable Reactive Barrier Investigation Updates January 2018.

The Water Management Committee was adjourned at 3:25pm with a motion from Bumby and a second from Harris.


Clerk of the Day, Jeff Bumby



Town of Eastham, MA

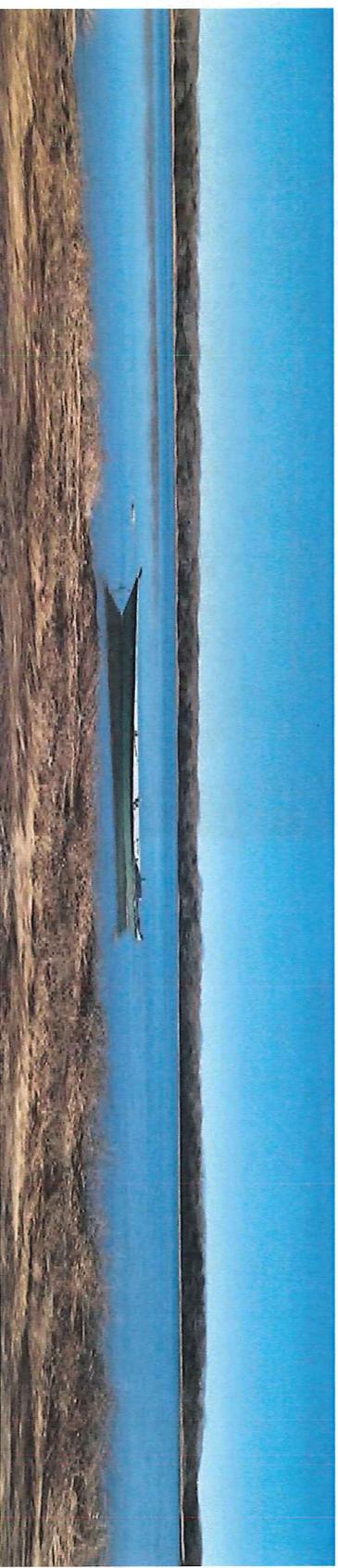
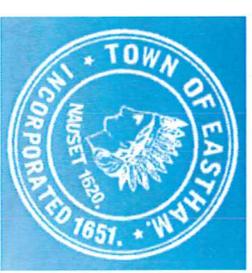
Wastewater Management Planning and Salt Pond Groundwater Analysis and Permeable Reactive Barrier Investigation Updates

January 2018

Jane Crowley | Town of Eastham

Jessica Janney and J. Jefferson Gregg | GHD

Doug Heely | Environmental Strategies and Management



M T Environmental Restoration
Molecular Sciences Group of Science
Molecular Translations, Inc.

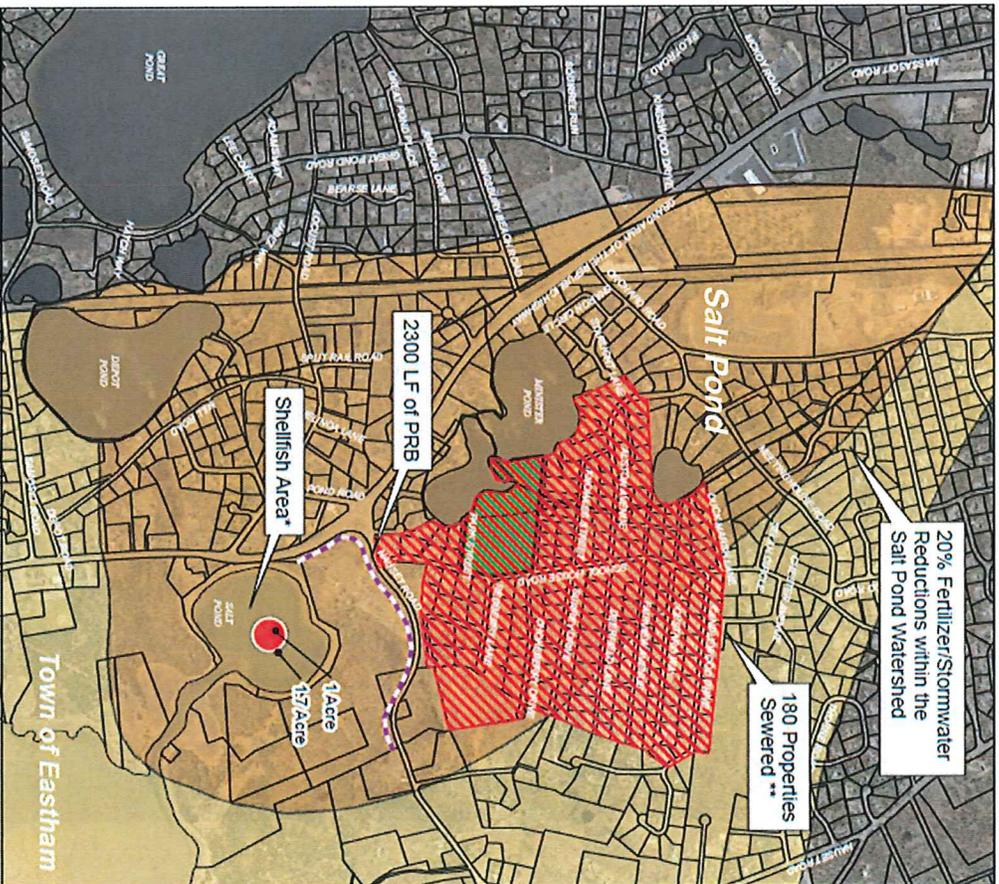
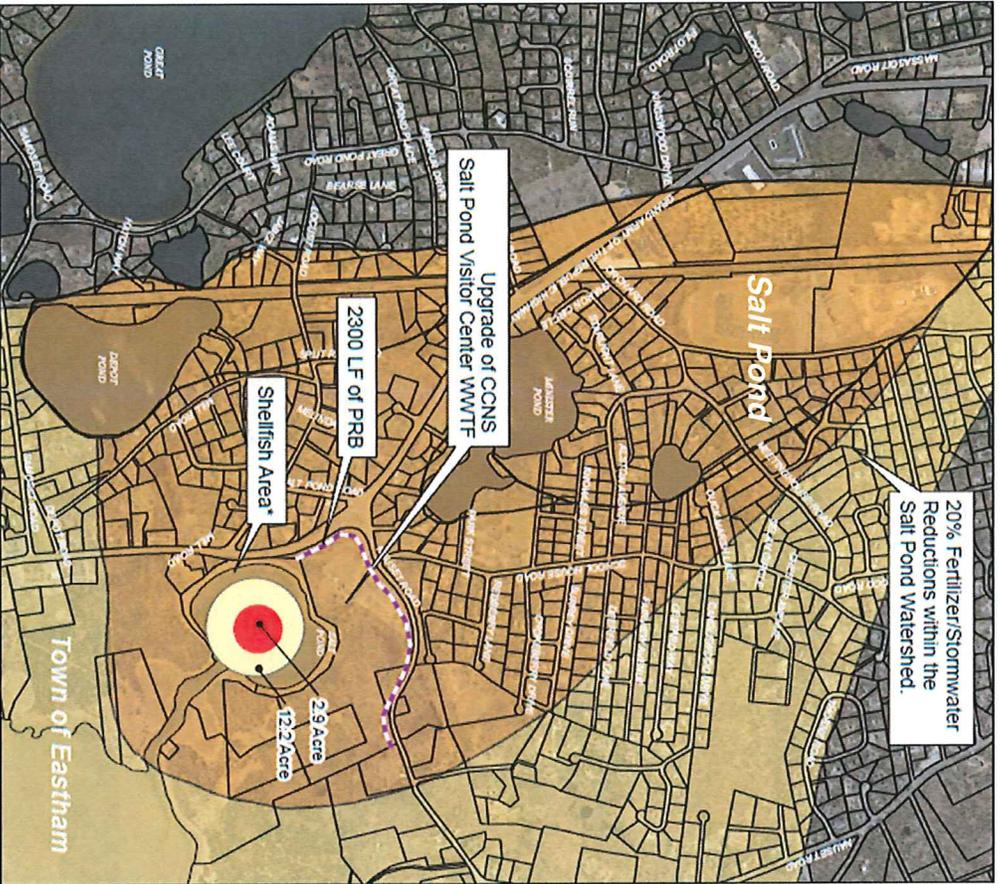


Presentation outline

- Salt Pond Wastewater Management Scenarios
- Budget Funding – Current and Future
- Permeable Reactive Barrier Technical Memorandum (Draft) Summary
- Budget Summary Overview



Salt Pond – Hybrid 1 & 2



Potential Recharge Site

HYBRID 1

HYBRID 2



Tech Memo No. 3 – Salt Pond

Summary of Hybrid Scenarios – Key Components:

Technology	Hybrid Scenarios	
	Hybrid 1 Evaluation	Hybrid 2 Evaluation
Fertilizer and Stormwater Reductions	Town Fertilizer Bylaw - 20% ⁽¹⁾	
Permeable Reactive Barrier	Current - Well Data Collection and Analysis / Detailed Investigation / PRB Pilot	
Shellfish/Aquaculture	Shellfish Feasibility Study	
Enhanced I/A Systems	CCNS in process to address nitrogen removal performance.	--
Wastewater Collection and Treatment	--	Implementation if improvements above are not effective – adaptive management approach
<p>Note: (1) Represents a 20% credit of the total Stormwater / Fertilizer load only.</p>		



Budget Funding – Current and Future

Current Planning Efforts – FY18 Budget

- PRB Detailed Investigation – Salt Pond – Ongoing
 - PRB Technical Services (MTER) \$10,500
 - Groundwater Investigations (ES&M) \$71,000
 - Shellfish Feasibility Study – Salt Pond (ScienceWares) \$15,000
 - Additional Wastewater Planning Support and Services (GHD) \$51,500
- \$148,000**

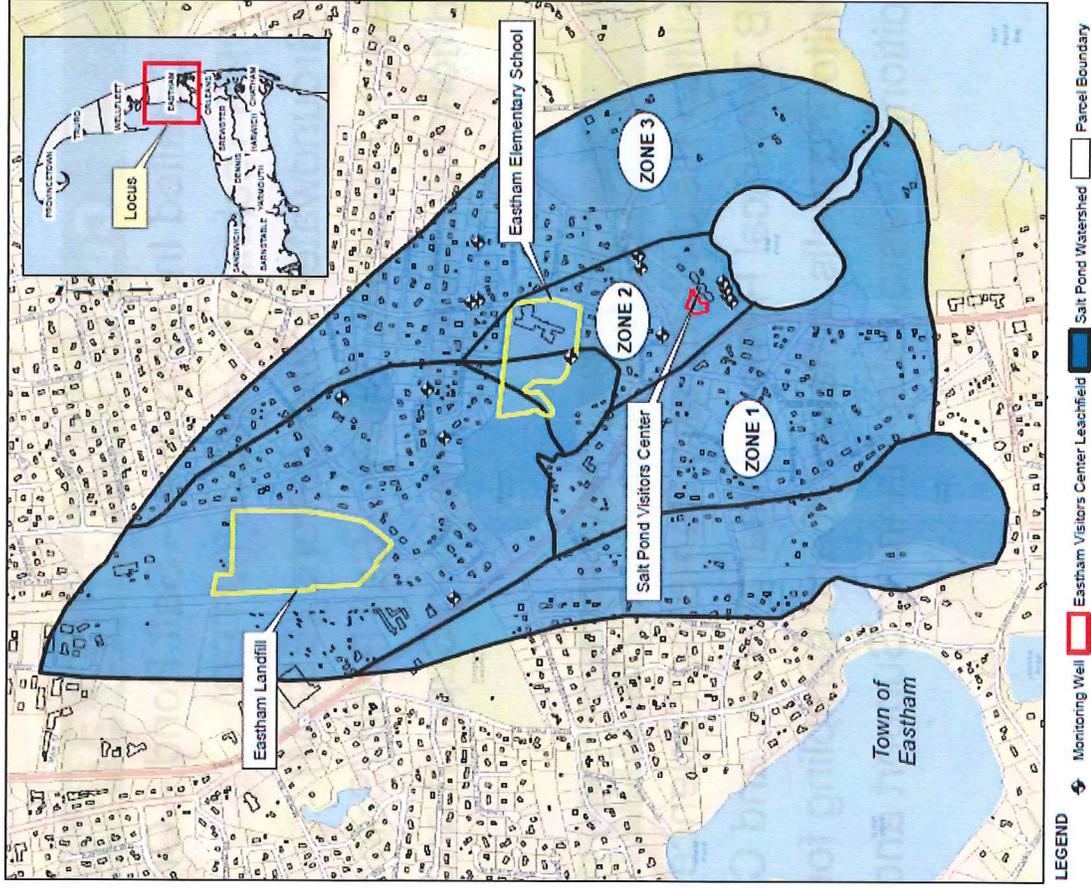
Future Planning Efforts – FY19 Budget

- Shellfish Field Study and Sampling (ScienceWares) \$36,500
 - PRB Technical Review, Initial Design, and Cost Estimating (MTER) \$21,000
 - Monitoring wells installation and sampling for PRB pilot project (ES&M) \$64,000
 - Additional Wastewater Planning Support and Services (GHD) \$78,500
- \$200,000**



PRB - Project Purpose and Background

- Determine data gaps in hydrogeology and what information is still needed to better characterize groundwater flow to Salt Pond

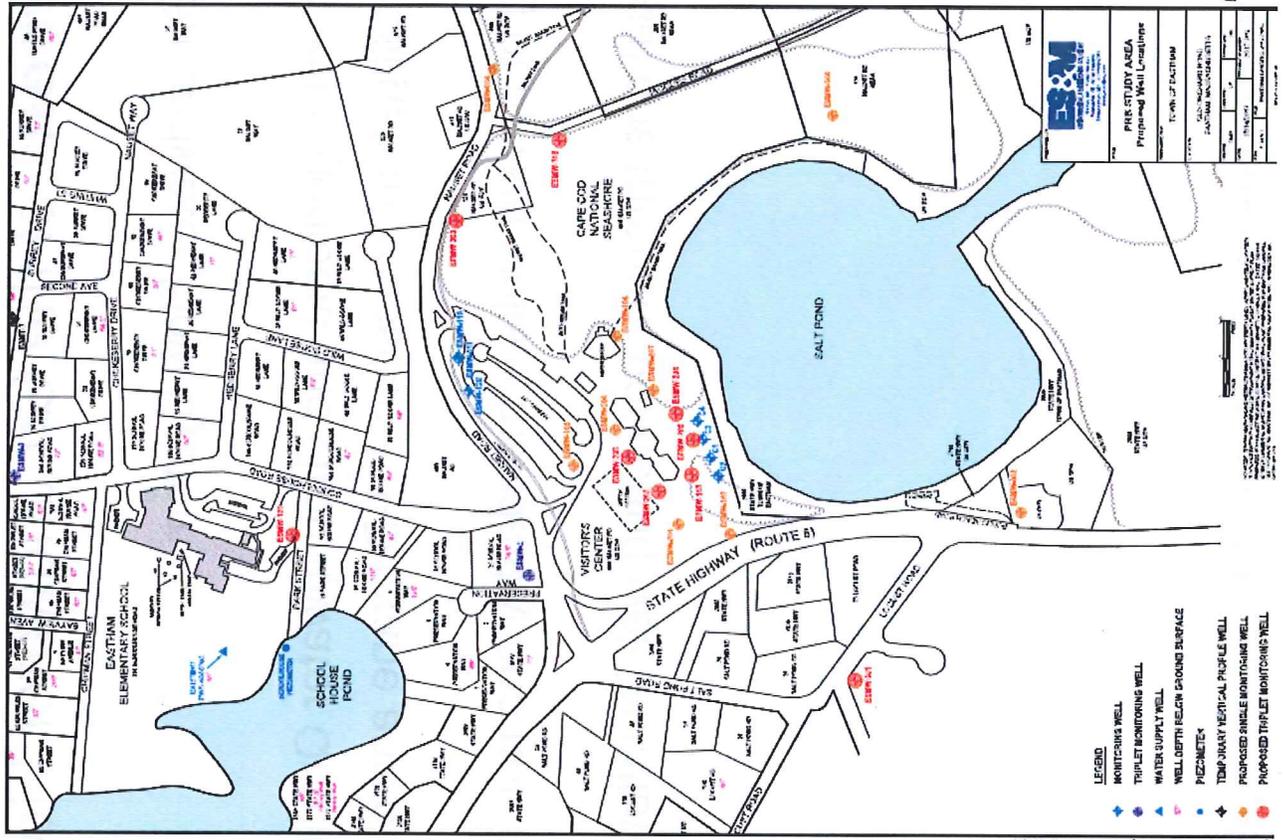


PRB - Assessment of the Groundwater Flow System

- Assessment of the Groundwater Flow System
 - USGS and NPS
 - Town of Eastham Hydrogeologic and Groundwater Quality Data
 - Extensive investigation to assess 1,4-Dioxane and other contaminants from landfill
 - Nitrate testing of private wells – mandatory and non-mandatory program
 - Direct investigations through monitoring well installations



Monitoring Well Locations within Salt Pond Watershed

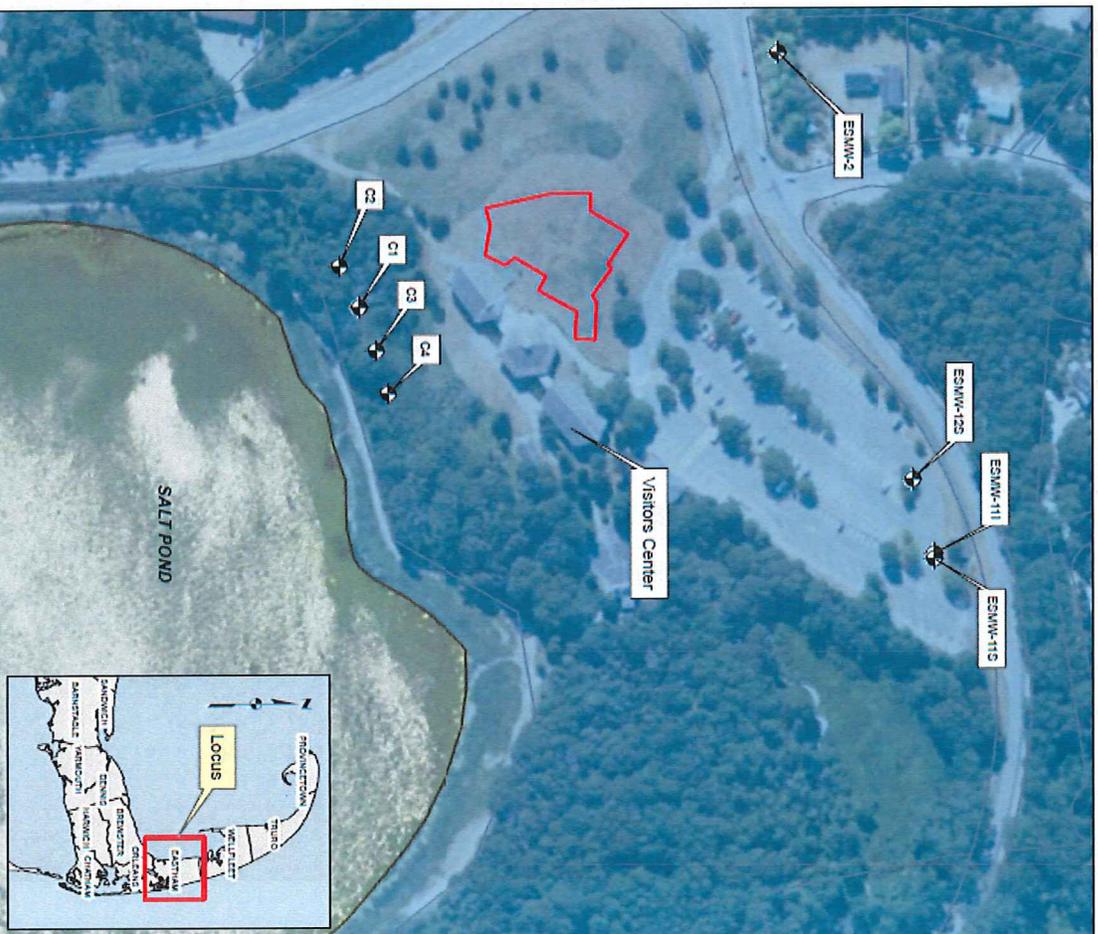


Analysis and PRB Investigation Updates

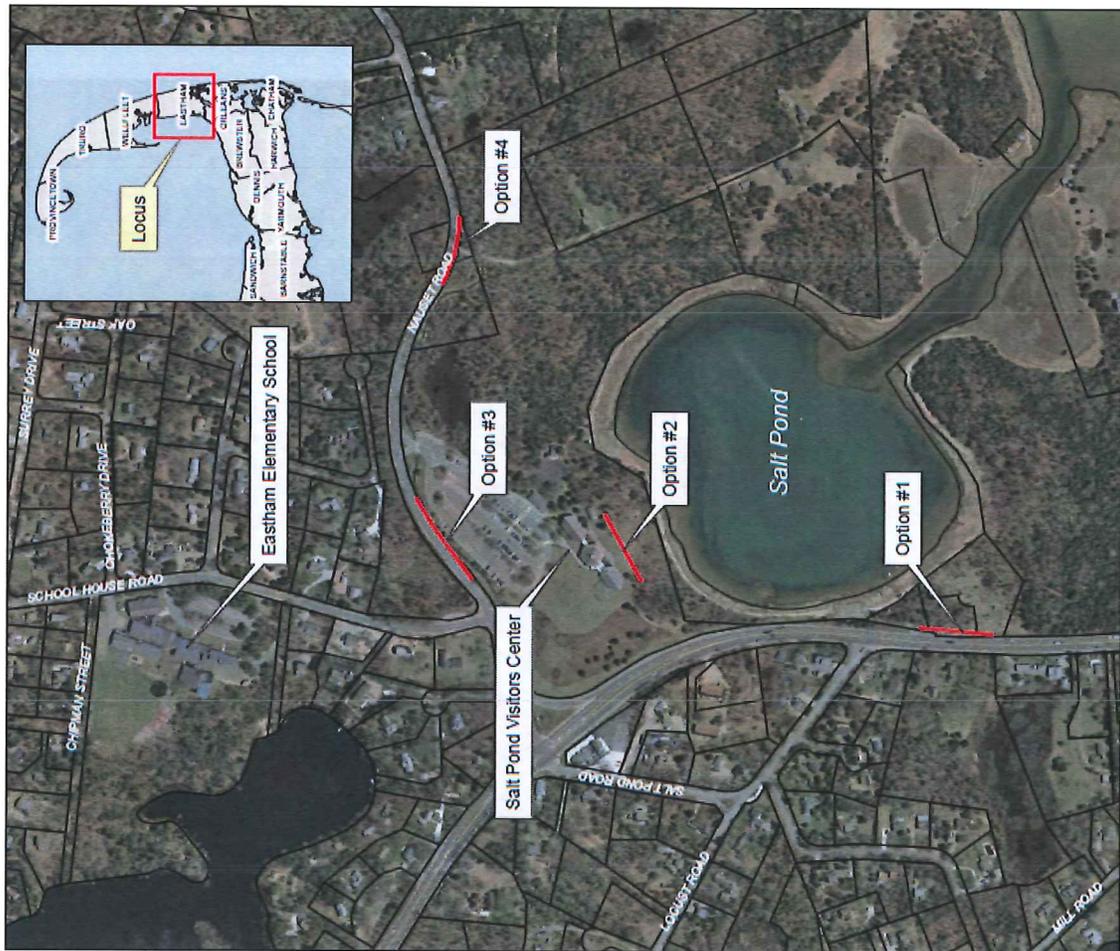


Town of Eastman

Monitoring Well Locations – Salt Pond Visitor Center Area



Identification of Potential Demonstration PRB Locations



LEGEND
— PRB Demonstration Option



Identification of Potential Demonstration PRB Locations

- PRB Demonstration Option Summary

Table 3 Demonstration Option Summary

	Option 1	Option 2A	Option 2B	Option 3	Option 4
Flow Zone	1	2	2	2	3
Depth Below Water Table (ft) ⁽¹⁾	70	110	50	110	130
Depth to Groundwater (ft)	15	30	20	30	20
Total Depth (ft)	85	140	70	140	150
Setting	NPS meadow	SPVC	SPVC	Nauset Road	Nauset Road
N-Flux (kg/yr) ⁽²⁾	195	607	440	307	363

Notes:

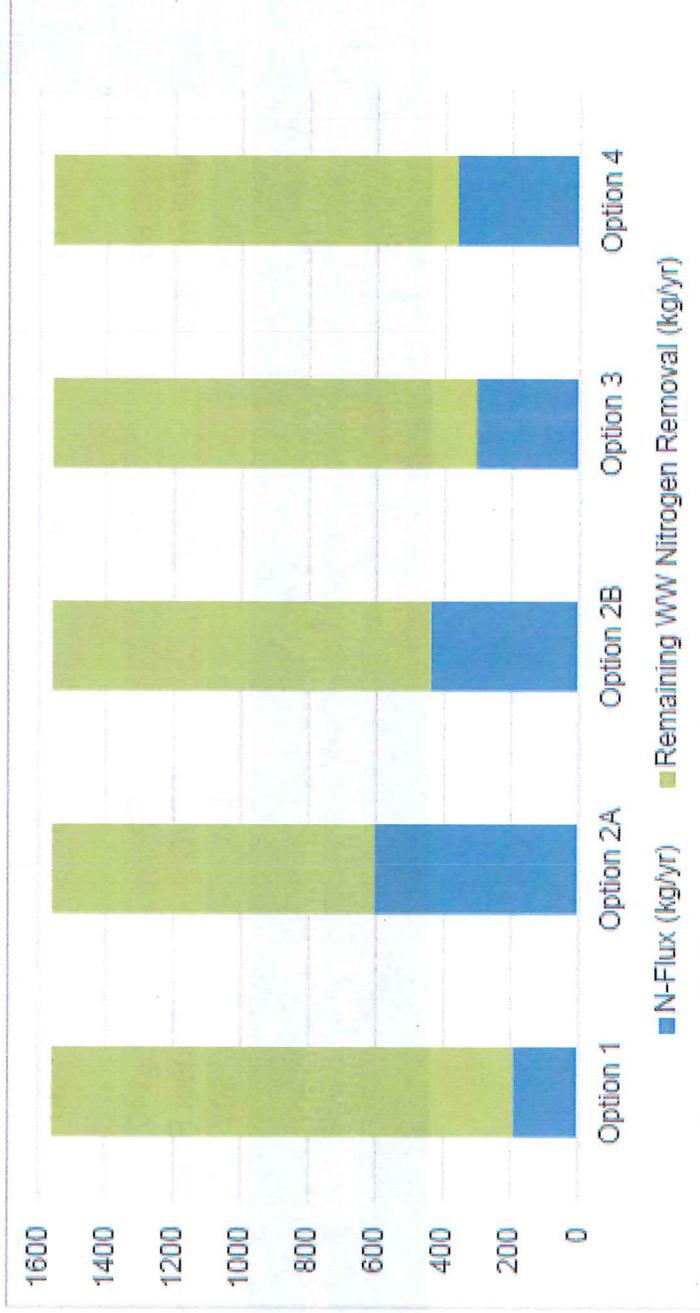
- (1) Depth Below Water Table is also considered the target treatment depth or “height” of the proposed PRB. However, drilling considerations for each proposed PRB height start at the land surface.
- (2) N-Flux is calculated along a 300-foot length PRB.



Next Steps – Demonstration Site Investigation and Selection

- Stakeholder Involvement – prioritize demonstration(s) site options
- Detailed hydrogeological investigations to determine if specific locations suitable for Demonstration PRB - information still needed to gain a full understanding

Table 4 Estimated Nitrogen Removal by PRB Demonstration Option



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Budget Funding – Future

Future Planning Efforts

- Shellfish permitting, demonstration project, continued propagation
- Complete design of PRB and install PRB pilot; design and install 2nd PRB
- Traditional infrastructure design and installation – adaptive management
- Stakeholder involvement and discussions
- Long-term monitoring
- Town Cove and Salt Pond focused

